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EXPERIMENTS

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OBSERVATIONS

O N T H E

SULPHUREOUS WATERS

A T

CROFT AND HARROWGATE,

I N Y O R K S H I R E.

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TO THE PUBLICK DISPENSARY, IN CAREY-STREET.

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T O

SIR JOSEPH BANKS, BART.

PRESIDENT, AND TO

SIR WILLIAM WATSON, KNT.

VICE-PRESIDENT OF THE

R O Y A L S O C I E T Y,

THE FOLLOWING TREATISE

IS INSCRIBED BY

THEIR MOST OBLIGED,

AND HUMBLE SERVANT,

THE AUTHOR.

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VICE PRESIDENT OF THE
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OBSERVATIONS

ON THE

SULPHUR-WATER, &c.

AS nature hath consulted the convenience and necessities of human life, in dispensing every where, with liberal hand, the simple element of water; so hath she provided an alleviation of human misery, by impregnating, in particular situations, that element with principles which are found extensively useful in the cure of diseases.

B

To

To the former we are familiarized, and forget to be thankful; yet we see it in the various form of rain, dews, and vapor, in springs, rivers, or in seas, equally necessary to the production of minerals and vegetables, and to the life of animals, removing from these whatever is noxious or disagreeable, quenching their thirst, obviating the effects of heat, and conveying nourishment through the whole body. The latter being more rare, hath at all times attracted the notice of philosophers; and the medicinal qualities of such waters have been gratefully acknowledged by many sufferers, whom they restored to health and enjoyment.

It is, however, to be regretted, that we have not a regular systematic account of the most esteemed mineral-waters, particularly in this kingdom. No great benefit

benefit is to be derived from the general treatises published some time ago, which afford but a tedious detail of experiments not much to the point, or theoretical explanations involved in metaphor and obscurity, without adding to our real knowledge. Later improvements in chemistry give us new light in prosecuting these researches, teaching us to ascertain by accurate experiments, the true contents of mineral waters, fixed or volatile, and establishing the proper tests for detecting the different ingredients.

The sulphureous waters have always born the most distinguished rank, possessing the strongest sensible qualities and active principles of considerable importance in curing diseases. Many disputes have arisen with regard to these waters: Some even deny the existence of sulphur in them, and instead of it,

suppose a combination of sulphureous principles in a different form, or an oily matter undergoing putrefaction. It is not yet on the whole determined, whether the sulphur be dissolved by an intermediate substance, or all the appearances depend on a volatile sulphureous vapor generated in the bowels of the earth. These doubts made me gladly embrace the opportunity of residing near a curious spring of this kind, to enter on a course of experiments, in order to satisfy myself with respect to its nature and contents. The result may perhaps be not disagreeable to the public; at least the comparison of this, with others of a similar quality, will be a matter of curiosity, and I hope of some advantage.

The sulphur water at Croft has been long known and employed with success. Dr. Short, in his elaborate treatise, takes
some

some pains to recommend it in the following account:

“ The next sulphur-water of note, after Harrogate, is *Croft Spaw*, within the borders of Yorkshire, and on the confines of the bishopric of Durham, very near Darlington. This has merited a great reputation, and is much frequented in the season, has done many very eminent cures, both by bathing and drinking. It is in the parish of Croft, about half a mile from the church; is in a charming situation, rises up south-east; was first taken notice of, and brought into fame by Sir William —*, in whose Lordship it laid. It is a fine clear spark-

* The gentleman here referred to is Sir William Chaytor, son, or grandson of Sir William Chaytor, who was created a baronet in the 26th year of Charles II. June 28, 1671. Croft Hall still remains in the possession of the same family.

ling

ling water, smells strong of sulphur; nor does its stream rise or fall by rain or drought: the place lies all upon limestone: every thing in its course becomes white with reddish specks between. It is drank from four pints to nine.

This place deserves greater resort, having done several cures by bathing and drinking."

The spring is on a hillock, from which the ground rises gradually every way, except to the eastward: it seems to be considerably above the level of the river. Two small brooks flow on each side, not perceptibly tainted with the sulphur principle. There is a film on these where stagnant, which we shall prove, owing to the presence of iron. The spout, the leaves, stones, &c. near the spring, are covered with a white floccu-

culous

culous or filamentous matter, which is not found many yards below in the stream, nor does the water retain its sensible qualities strongly to any great distance. The soil is clayey; of minerals, I could only find in the breaks of the strata, near the place, coal, ironstone, and limestone.

The water itself is clear and sparkling, smells strong of the sulphur, is pungent to the taste, and by no means so nauseous as most others of this class. It tarnishes silver in a short time, either when put into it, or held in the exhaling vapor.

The flow is very copious, amounting to two hundred gallons and more per hour from the spring within the present bath. There is another pipe adjoining
with

with a smaller stream, which may afford about half that quantity.

Croft water was compared, in respect to weight, with the water of the river Tees; but though tried at different times, and in different quantities, the weight was exactly the same in each.

It is said to be colder than common springs, I believe without reason. July the 2d afternoon, thermometer standing in the open air at 73° , I found its heat as issuing out to be $51^{\circ}\frac{1}{4}$. September 20, 8 A. M. thermometer at 56° . it was exactly the same, two degrees above the temperature of caverns and common springs.

The white hairy mucous matter on the sticks, grass, &c. in the course of sulphur

fulphur waters, is supposed to prove the existence of real sulphur in them, burning blue, it is said, with the smell of sulphur. I collected a quantity of it, and after drying, applied it to a hot iron, but no part of it melted; neither did it flame when held to a candle, only burnt away with a disagreeable herbageous smell. Examined by a microscope it was evidently a vegetable substance, answering to the character of Byffus, though a species not described in the system of Linnæus. The appearance, when thus magnified, is very beautiful; the small simple filaments of the Byffus, take the threads of *conferva rivularis*, or of mosses growing in the spring, as middle-ribs, and go off thence very close together in form of a feather; it seems therefore to be one of the parasitical plants. It is a remarkable circumstance, that this

Byffus is found below the spring, no further than the water retains the sensible sulphureous qualities, as if the hepatic gas was necessary to its production and nourishment. The following description and arrangement seem most suitable :

Lanuginosa Byffus filamentis simplicibus,
tenuissimis, albis.
Habitat in fontibus præcipue
sulphureis,
Confervis adhærens, lapidesq.
&c. obtegens.

At Dinsdale, about three miles from Croft, on the Durham side of the Tees, in another similar spring, it is found in great abundance.

EXPERI-

Soon after the first publication of this work I received a letter from Dr. Veling of Aix la Chapelle, in which he mentions that a vegetable substance nearly resembling the Byssus I had described, was found in the sulphureous waters of that place.

The following extract from his letter was published in the Medical Journal, vol. 3. p. 430. “ Opusculum tuum de Byssu
 “ Lanuginosa, quod dilectus amicus meus
 “ Weidmann, cum nuper hac transferit,
 “ mihi præbuit, perlegi; et quia non so-
 “ lum Aquisgrani sed etiam in Pago
 “ Burdscheid plurimi fontes aquam sul-
 “ phuream calidam eructant, statim ad
 “ illos fontes nos contulimus: Ecce!
 “ inveniebamus plantam a te def-
 “ criptam, lapides eadem ratione obte-
 “ gentem: Qua de re certiores te facere
 volui;

“ volui ; tibi que, oblata occasione, exemplar plantæ, ut istud inspicias, mittam.”

The Doctor, according to his promise, did me the favour to send specimens of the plant found in the waters of Aix la Chapelle and Burdscheid, which I examined, with the assistance of Mr. Dickson, through one of Sir Joseph Banks's best magnifiers.

We were surprized to find it a new species, totally different from the Byffus of Croft ; not being composed, like that, of parasitical filaments growing in a plumose form on the threads of *conservarivularis*, but consisting of long, regular filaments, very much interwoven and coiled together.

The following botanical character therefore seemed proper for this plant ;
Byffus—filamentis, simplicissimis æqualibus, albis.

EXPERI-

EXPERIMENTAL HISTORY.

I NEXT tried various experiments on the water, in order to discover the contents, whether saline, metallic, or earthy.

A solution of *saccharum saturni* dropped in, made instantly a milky appearance and precipitation, as it does with all waters containing calcareous earth, or earth joined to an acid.

Soap was decomposed and curdled.

A strong solution of galls being added to an equal quantity of the water, did not cause any alteration in the color, but a shining variegated film formed on the surface, similar to what is seen on many

stagnant waters, called by workmen Iron-waters.

To determine whether it was really a calx of iron, I dipped a knife in vitriolic acid, and afterwards in infusion of galls. The surface of the metal exhibited exactly the same variegated appearance, which might be rubbed off, or communicated to the infusion, spreading along the top of it. I collected also a quantity of the film from this and other waters where stagnant, and dissolving it in spirit of salt, added to the solution an infusion of galls, the mixture became instantly of a dark green, or black color, and a slight film formed again on the surface. Hence we may conclude, that galls more readily strike a black color with solutions of iron in the stronger acids, but have not an equal effect when it is suspended by fixed air.

air. Galls, however, as we have shewn, become a satisfactory test in the latter case, in a way which has not been generally attended to.

Alcalis, as *Lixiv. Sapon.* or rather perhaps the caustic, may be used for the same purpose. It throws to the surface a shining white or yellowish film, with other properties the same as above described.

By the assistance of these two tests we may perhaps discover the presence of iron so suspended, in many waters not supposed to have any mineral impregnation.

There is then a small portion of iron dissolved in those waters, which may be disengaged by the astringent vegetables growing in them, and escape of the mephitick gas or air. It is not amiss to have
ascertain-

ascertained this point, as the film appearing on the sulphureous waters was, by Dr. Rutty and others, taken, without reason, for sulphur, or an oil.

Syrup of violets, diluted with the fresh water, turned a little greenish. *Infusion of Litmus* underwent no alteration.

Lime-water added to it, suffered an instant decomposition, and deposited the lime on the sides of the glass.

Lixivium saponaceum turned the water immediately milky, with a strong smell as from lime; a large quantity of air bubbles arose, and a shining scum formed on the top, not variegated. The sediment was brownish and flaky; some part of it dissolved again with vitriolic acid, the remainder being washed with fresh water repeatedly, effervesced with acids;
the

the compounds insoluble in water, except that with marine acid.

Spir. salis ammoniac. cum calce viva made a white precipitation, which dissolved again entirely, by pouring in a little vitriolic acid.

Vitriolic acid made no change in the color, but a discharge of an immense quantity of air bubbles. In four hours no precipitation ensued: the other acids made no alteration; nor was the discharge of air bubbles so considerable.

The contents of the water as obtained by evaporation, were such as might have been expected from the trials by mixture.

Three quarts evaporated to dryness, left a residuum of two drams, one scruple,
partly

partly in form of a white powder, partly in spangled flakes. To separate from this sediment all the saline parts, pure rain water was poured on it repeatedly: after filtration there remained about four scruples of a white calcareous earth, which effervesced smartly with vitriolic acid. The salts, after evaporating the water, weighed together one dram. Cubical crystals first formed, which decrepitated when applied to a red-hot iron *. As

* I previous determined the presence of sea-salt, by dropping solution of silver into this watery solution of the salts in the sediment; a white cloud and coagulum formed instantly, which is a certain test of that salt being contained,

After the salts had been evaporated to dryness, and water again poured on them, my friend Mr. Brown, chymist, turned the clear solution green with syrup of violets, whence he suspects there is a small quantity of fossil alcali also in the water.

the

the water cooled, other crystals appeared of an irregular form and bitter taste, which deliquated in the air. I dissolved some of these in fresh water, and dropping in Lixivium Sapon. made a flocculous precipitation, which redissolved by vitriolic acid. A solution of the bitter purging salt tried in the same way, afforded exactly the same appearances.

This salt, therefore, seems to be a compound of vitriolic acid, and a calcareous earth, or rather magnesia, similar to the Epsom salt. The proportion of this is much the greatest; of a scruple, the whole quantity contained in a quart, only four or five grains were sea-salt, as nearly as I could determine.

Dr. Short's analysis is not much different from mine. " Nine quarts of it exhaled, he says, left twenty scruples of

D

sediment

sediment very white, and smelling strong of hawthorn flowers.

This sediment afforded six scruples of salt, so that the sediment is to the vehicle as 1 to $354\frac{1}{2}$. This salt dissolved, and set to crystalize, projected about two parts nitre, and a third part common salt."

This salt has been called nitre, or calcareous nitre, very improperly, as the acid combined with the earth is not the nitrous. In that case vitriolic acid would dislodge it with ebullition and fumes, making at the same time, a new compound.

COMPA-

COMPARATIVE EXPERIMENTS

O N

HARROWGATE WATER.

Harrowgate water being poured on powdered galls, a variegated scum covered the surface, which dissolved again by vitriolic acid.

When *Alcaline lixivium* was dropped into the water, a light brownish precipitation followed, and the sulphureous smell almost vanished; a white shining film formed on the top: this, as well as the earth dissolved again, by adding a little vitriolic acid, and the smell of sulphur was restored. The other acids also re-

store the smell of sulphur thus destroyed by an alcali *.

Vitriolic, or nitrous acid, put alone into the water, made it presently milky.

Spirit of salt had no effect at first; on standing some time there was the same milky appearance.

These Phenomena may perhaps be accounted for by the well-known affinity betwixt alcalis and sulphur. If the alcali attracts the hepatic gas, it must necessarily suppress its volatility, arresting, as it were, the particles which would fly off and produce the smell. Or if the hepar be the calcareous, may not a decomposition take place, the alcali precipitating the earth, and forming closer union with the sulphur?

When acids are added, the sulphureous vapor is suddenly set at liberty, and consequently the smell restored, or even increased for a moment.

The

The mixtures continued the same for a day or two, except that with vitriolic acid, which became clear and pellucid at top, coating the inside of the glass with a light granulous precipitation. This collected, melted in moderate heat, and inflamed by the contact of fire. The others had also left a slight coating on the glass, insoluble in acids or alcalis.

Some *hepar sulphuris* was dissolved in water; an alcali took away the smell; vitr. acid made it as strong, or stronger than before, but it soon went off. Vitriolic acid made the solution milky; it continued so for several hours, but the sulphur was at last deposited.

It must be observed, that when Harrowgate water had been kept exposed till its peculiar smell was gone off, the addition

addition of acids did not turn it milky, or make any visible alteration.

It appears from the experiments, that a small quantity of real sulphur is contained in Harrowgate water, under the form of a hepar, which is further proved by the bottles of it when kept a long time; a white rim forms on the neck, over the water, and answers to all the characteristics of sulphur*.

There

* This last is rather a proof of sulphur existing in the water uncombined, as will appear from the following experiments: I impregnated pure water with the gas arising, by pouring vitriolic acid on a solution of hepar sulphuris; it took a very strong impregnation, and appeared a little turbid. Acids and alcalis made no precipitation or visible change. Keeping it close corked, the following day a precipitation was made, and the water became clearer. The sediment collected, proved to be sulphur, which had undoubtedly been carried up along with the gas.

The

There is not, from any of the trials on Croft-water, a proof of a sulphur existing in bodily form. Its sulphur principle is aërial, or what is termed by Bergman, hepatic gas, an elastic fluid, similar to that produced by decomposing liver of sulphur with an acid.

I endeavoured to obtain the volatile parts by the following apparatus: a cork, perforated with a glass tube, was well fixed in a bottle of the water and sealed.

The celebrated Bergman is of opinion, that sulphur is soluble in water, by means of the gas sulphuris. It is certainly evident, that sulphur may thus be at least suspended, or diffused a considerable time, for my impregnated water, after clearing itself, continued to deposite several days.

N. B. That portion to which vitriolic acid was added, emitted a stronger smell, and for a longer time, than the simple impregnation.

A blad-

A bladder, from which all the air was carefully pressed, was tied firmly round the cork, and again round the tube above the cork. After keeping the bottle in boiling water for the space of three hours, a quantity of air distended the bladder, which, from the bulk of water it expelled from a glass measure, marked with equal divisions, I concluded to be betwixt three and four ounce measures.

I then passed the air through the tube into a ten ounce vial of lime-water, its neck being plunged in a basin of the same. The lime was precipitated; and on agitating the phial, in order to make an absorption of all the mephitic gas, I found a residuum, which occupied the space marked on the phial for two ounce measures. This was the hepatic gas, which, upon trial, did not prove inflammable, though it smelled sulphureous like the water.

From Dr. Higgins' Analysis of Harrowgate water, a Winchester gallon contained four ounce measures of the acidulous gas, beyond the quantity retained by the calcareous earth in the heat of boiling water, and 35 ounce measures of fetid inflammable gas, such as may be extricated from calcareous liver of sulphur, by vitriolic acid.

With respect to the other contents of these waters, the Harrowgate has small proportion of calcareous earth: its salt is principally sea-salt. From the analysis, the quantities are determined thus:

A Winchester gallon contains,

Calcareous earth saturated	oz.	dwt.	gr.
with acidulous gas	0	1	12½
Marine salt of magnesia	0	4	23½
Sea-salt	1	7	12½

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MEDI-

MEDICINAL QUALITIES.

THE strength and contents of these two waters are so different, that we may reasonably expect considerable differences in their effects on the body and its diseases. Croft-water has more Epsom-salt, and but a small proportion of sea-salt: The briskness and large proportion of calcareous earth taken up, shew it to be more replete with mephitic gas, or fixed air, than the Harrowgate. It therefore possesses, in some measure combined, the advantages of sulphur waters, and of those whose utility arises principally from an impregnation with *that* air, such as Pyrmont, Seltzer, &c.

From

From this view it may perhaps not be difficult to explain the different cases in which the preference is due to either of these waters.

Sea-salt is the most heating of all the neutrals, and peculiarly stimulating to the muscular fibre, acting even as rubefacient. Hence in external application it is an useful discutient of indolent tumors, and has been found very efficacious in several obstinate cases of chronic rheumatism, attended with loss of activity, or vigor in the part.

On the same principle it must be improper for inflammatory habits, or in topical inflammations where the action of

vessels is increased. This I would apply to two cases of disease, for which this class of waters is principally recommended; I mean scrophula, (one species of it at least,) and incipient consumptions.

They have, as is generally supposed, a common predisposition; affect those of the sanguine habit, occur at the period most liable to inflammatory disorders, and often require, especially the latter, a cooling regimen to considerable extent.

The strong sulphur waters, with marine salt, of Harrowgate and Moffat, or sea-water itself, are then prejudicial, and hurry on the tubercles rapidly to suppuration. The same objection does not lay
against

against the milder waters of this kind: My worthy friend and patron, the late eminent Dr. Trotter, informed me from very extensive experience, that he had known schrophulous tumors of the glands, which Harrowgate water rather aggravated, yield readily to the use of Croft-water; and had reason to think, that tubercles of the lungs might be resolved by it, from seeing the symptoms of an incipient consumption often entirely removed. Dr. Short's sentiments are conformable to what I have above delivered. " Croft, Crickle and Broughton, which have less salt and a mixture of nitre, are therefore less heating, drying, and stimulating, but more cooling, attenuating and diluting, and

and therefore better adapted to choleric fixed lean bodies; such as have a quick sharp small pulse, and hectically disposed. But of all those, Croft Spaw, as it contains most nitre, is best. These also answer the intents of sulphur, according to the quantity they contain of it; and also the design of salt according to their sundry quantities, which there is no occasion to repeat, nor to set or prescribe particular rules: only as the former, Harrowgate, &c. were more irritating, heating, drying and evacuating, they may be used with greater freedom by paralytic, dropfical, icteric and phlegmatic bodies; and the last more freely by choleric, thin, hectically disposed persons." Vol. I. p. 316.

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The same author has ranked Croft-water along with Harrowgate, as useful in various other diseases. Vol. I. p. 314.

“ Since, therefore, Harrowgate, Crickle, Croft, &c. are so plentifully stored and impregnated with sulphur, of what eximious force and virtue must they be in removing and remedying outward disorders; how powerful discussers of morbid humours fixed in any of the extreme or external parts? From this healing, drying, discussing, penetrating principle it is, that they cure swellings, aches, pains, numbness, ulcers, schrophulous, or other scab, itch, leprosy, tetters, ringworms, creeping, spreading and inflamed excoriations,

tions, by washing, bathing, and fomenting."

I shall point out more particularly the disorders in which Croft water has been found of advantage. From the impregnating principles it must, when applied externally to the body, communicate a more powerful stimulus than cold water alone. How far absorption from the surface may extend this, cannot be exactly ascertained, but it certainly deserves to be taken into consideration. Thus the water will be more bracing than simple cold bath, and hath been found so in many cases of *chronic weakness*, with emaciation, not owing to any topical cause, but rather to bad habit of body, or general

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ral relaxation. On the same account it is useful in fluor albus, * and other disorders incident to the fair sex. Old gleans will also yield to the use of Croft water: in one particular instance I knew it succeed after the cold-bath, Scarborough, and other medicinal waters had failed.

It is often very serviceable to many, with whom sea-bathing disagrees, whether the salt-water be too strong for weak and delicate constitutions, or the sea air too keen and piercing. Weakly and de-

* Menorrhagia from relaxation, and consequent sterility, are most properly treated in this way; nor is Croft Spa without its fame in those instances.

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licate

licate children in particular, by bathing in Croft water, have, in a short time, been restored to health and vigor. The *rickets*, which depend upon, or are nearly connected with this habit in children, and generally prove very obstinate, yield more readily to this treatment than any course of medicines. Indeed it is difficult, at a tender age, to make them take internally, what might be proper, for any length of time.

There is an *inflammation* of the eyes, a common attendant on scrophulous complaints, and which sometimes occurs in infants without any other appearance; the cure is not unfrequently tedious, nor if attempted by external application of
 astrin-

astringents, &c. without danger. I know .
 however, from many cases, that a pro-
 per use of this mineral water, is a safe
 and effectual remedy.

The cases recorded of this kind are
 the most numerous, and the cures per-
 formed almost miraculous. When the
 eye-lids were much enlarged and sore,
 with perpetual flow of tears, and vision
 much impaired, a compleat cure has been
 made in less than a month, and every
 disagreeable symptom removed.

With regard to its internal use, I must
 observe, that it agrees well, fits light
 and easy on delicate stomachs. When

the stomach is primarily affected from a relaxed irritable state, with sourness, flatulence, acidity, and the other symptoms of indigestion, the internal use of the water along with bathing, is of the greatest advantage. The calcareous earth contained absorbs the acid; while the fixed air extricated, proves a grateful stimulus.

The quantity proper to be taken at one time, cannot be the same in all constitutions. It is generally used from one pint to three; the quantity necessary to purge, rather overloads the stomach, and it is better to take a quarter of an ounce of some salt along with a pint of it, which moves most people.

of

A class of diseases very extensive and very obstinate, is the *cutaneous*, comprehended under the general term scurvy, for which sulphur waters are accounted specific. They appear in many different forms of eruptions, blotches, pimples, running sores, or dry scaly crusts. Their causes and theory are involved in great obscurity: some suppose them to originate from acrid matter in the circulation, which is thrown out upon the surface of the body. Nor does it indeed seem unreasonable, that an acrimony in the blood, produced by improper diet or bad assimilation, should more particularly affect the vessels of the skin, whose sensibility is greatest, whose minute ramifications

fications expose them to closer contact with any morbid matter passing through.

An acrimony in the fluids does not, however, at all times, seem to be the immediate or proximate cause of such disorders. We may place it on many occasions in a bad state, or preternatural action of the cuticular vessels, owing either to a direct external stimulus applied to them, or to an indirect one from sympathy with other parts. Thus some kinds of aliment taken into the stomach, especially salmon, muscles, and other fish of difficult digestion, or improper mixtures of food, will, in certain constitutions, produce an instant eruption over the surface of the body, which must be a
sympathetic

sympathetic action in that part, as it takes place before a communication of the acrimony itself from the stomach to the skin can be supposed. This disorder of the skin, by any repetition of such diet, is apt to become confirmed and habitual.

Direct irritations to the vessels of the skin by rubbing, the application of acrid substances, or accumulation of fordes, also produce various cutaneous affections, as pustules, crusts or sores, which exude a corrosive sanies.

Another proof than an improper state of the skin constitutes the immediate
causes

causes of such disorders, is their being hereditary. I have observed many of them run in families, and prove extremely obstinate in the cure. That an acrimony of the fluids should be transferred from one to another successively, is not easily conceivable. Few, on the other hand, are ignorant, that the structure of particular organs, predisposing to disease of those parts, is frequently communicated in this way.

The matter thrown out on the surface, may, therefore, often be not the cause, but the consequence of a new or morbid action in the extreme vessels, produced by some of these means. The action or
secretion

secretion being once begun, as in many other cases, is apt to become confirmed and habitual; and to suppress it then is difficult or dangerous. If the discharge be considerable, nature must accommodate herself to it, and provide a supply. The consequence of suddenly suppressing the discharge of matter, will, therefore, be an error both of quantity and quality in the fluids, the process of sanguification remaining the same. Besides this, it seems to be a law of the animal body, that the prevention of one action occasions another sympathetic action in some part of the system. Thus a superficial inflammation suddenly repelled, is often suc-

ceeded by an inflammatory action in some of the viscera. A suppression of the menstrual discharge brings on hemorrhage from the lungs, or inflammation and tumors of the mammæ.

In the same manner these affections of the skin, hastily repelled by the application of mercurials or astringents, bring on internal disorders of the lungs, stomach or head; asthma, bad digestion, congestions of the viscera or head, and epilepsy.

The remote or external cause of such disorders, cannot easily be referred to any particular species of diet. Overloading
the

the stomach by quantity, and food of improper quality difficult of digestion, equally injure the state of the skin, and produce superfluous humours.

Why are the nations of the north, and especially this kingdom, more liable to cutaneous affections? Too much animal food, dried and salted meats, or unfermented bread, with small proportion of vegetables, can be no *general* causes at this day: nor will our cold, moist atmosphere alone account for it. A more probable reason may be found in our neglecting the use of baths, which are so frequent and necessary in warmer climates. We suffer the perspirable matter perpetually

exhaling to condense on the surface of our bodies. It accumulates, hardens, forms a crust on the skin, and stopping the pores, forbids an exit to the fluid, which nature designed to throw off. This, therefore, stagnates, turns acrimonious, stimulates the extreme vessels, raises the cuticle in pustules, makes determination of the fluids and running sores. No wonder then, if in the spring, so many people complain of uneasiness, heat, and itching of the skin, or various internal disorders, not having washed their bodies perhaps for seven or eight months of winter. Some have omitted this point of cleanliness for several years, and must therefore surely experience all the evils arising

arising from stoppage of perspiration, especially at those seasons when it is required to be most copious.

In attempting a cure of the confirmed disease, we ought to proceed gradually, and have in view all the different circumstances. In plethoric habit, which often attends these complaints, it is proper to drain off a portion of the fluids by purging. Many mineral waters have the purgative quality of themselves: if not sufficient, a small addition of Glauber's salt will increase it to the degree required. To prevent disagreeable symptoms from suppressing a morbid discharge of matter, abstraction of the redundant fluids by
 purging

purging, is not supposed to be so effectual as an artificial drain by issues, which separate from the blood a matter more nearly of the same kind. Whether one be really a substitute for the other is not easily determined; but practice seems fully to have ascertained the utility of issues in many such cases.

With these cautions, and perhaps a few others, which will be obvious to every attentive practitioner, the use of this mineral water externally and internally, is with safety entered upon. In the former way, besides the effects of a cold-bath, the sulphur principle contained has the property of obviating in a manner not easily

easily explained, the morbid action of the cuticular vessels, for it appears that sulphur, in other forms, will produce the same effect, though perhaps not so completely.

By its mode of suspension in mineral waters, it seems to become more active and penetrating when given internally, yet without any stimulus that may occasion danger by a sudden alteration in the part or whole of the system.

The merit of Croft-water * in curing

* Its active powers are eminently shewn by what many scorbutic people have observed, of its relieving internal complaints, by occasioning an eruption on the surface of the body, and that often in a very short time,

these

these disorders, compared with others of the same class, cannot be precisely determined. It will be sufficient to show the several cases and examples in which it has been found of effectual service.

In the period of infancy and youth, determination of the fluids is made more to the superior parts; hence children are liable to eruptions there, the tinea capitis or scald-head, discharges off sharp ferous humor from the lachrymal gland, purulent inflammation of the eyes, &c.

Young persons are also subject to the itch and other cutaneous disorders, chiefly on the hands, arms and back.

In

In old age the inferior extremities are exposed to various affections, inflammatory swelling and tension, defluxion of humors of the erysipelatous kind, and other eruptions depending on the scorbutic habit, joined to weakness of circulation, whose termination is frequently in ulcers, very obstinate and difficult to cure. In all these cases the water of Croft has been employed with essential service, and particularly in the last instance. Defluxions on the legs not yielding to the common course of medicines, have, by bathing and drinking it regularly, been entirely removed in the space of a few weeks.

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There are other more general diseases of the skin, under the denominations of herpes and lepra. Our leprosy appears, for the most part, in the form of dry scurf or scales, without much inflammation or rising of the skin, attended commonly with some internal complaints from the near connexion of the skin and general habit. The herpes is still more disagreeable and inveterate, being a scabby, spreading eruption, with discharge of serous sanies, apparently corrosive. It has been divided into many species, only differing perhaps in degree. For every kind of these most loathsome eruptive disorders, the sulphur waters have at all times been found the surest, if not the
only

only remedy. I may say with safety, the water of Croft is not inferior to any of these, as appears from a number of successful cures, all the particulars of which would take up more room than the present performance can admit of.

There are some anomalous disorders, likewise, in which it is of service. Gravel may be particularly mentioned, which frequently depends on a languid circulation, and improper secretion in the kidney. The water, I find from experiment, has a much more considerable and permanent effect as a diuretic than common water; must therefore be well adapted, by increasing the flow of urine, to wash out fabulous concretions from

the pelvis, ureters and bladder, and perhaps alters the state of the secreted liquor, making it less liable to form such depositions.

It is much employed by the country people in chronic rheumatism. In stiffened and enlarged joints from that cause, weakness and loss of motion, it has performed several cures, of which the crutches formerly hung up, were testimonials.

Sulphur waters are commonly reckoned a certain and safe remedy for worms; the Harrowgate has deserved particular fame, and cures independent of any evacuation. I make no doubt Croft-water

water is also effectual, but have not seen it used in more than one case, where indeed it removed all the disagreeable symptoms.

I must observe, that Croft Spa was formerly known and employed more extensively than now; much company resorted to it from different parts of the kingdom. The water sealed in bottles was sold in London, and gained much esteem; but since more suitable accommodations have been made at other places, it has been in some measure forsaken from the want of equal conveniences, and its advantages are principally experienced by the neighbouring country, or towns and villages adjoining,

I hope,

I hope, however, its use may be extended according to its merits, as the present proprietor and lord of the manor, William Chaytor, Esq. of Spennithorn, member for Heydon, in Yorkshire, proposes to build a new bath, with dressing rooms, &c. for the ladies separate, and a house upon the spot, with proper rooms for the accommodation of company. There is also in the town of Croft a very good inn; or to such as choose private lodgings, several agreeable farm-houses adjoining. No situation can be finer or more convenient than that of Croft: it stands along the river Tees, bordering on the most fertile parts of Durham and Yorkshire, three miles from Darlington,

twelve

twelve from Northallerton. The great north road from London to Newcastle and Edinburgh passes through it. There is a post every day, except Wednesday; and every day passing through north and south two coaches, two diligences. Also to the westward, Leeds, Liverpool, &c. two diligences.

The walks and prospects about Croft are particularly pleasing. Half a mile below, on a high bank of the river, is the delightful village of Hurworth: and further, in its serpentine course, Middleton, Sogburn, Dinsdale, &c. The last will afford much amusement from the locks laid across the river, and large salmon fishery below, as well as its romantic

tic situation, environed by woods and high brown rocks.

I have only to observe, that the market of Darlington supplies butchers meat, and other necessaries of life, at very reasonable prices; and is also well stocked with fish of all kinds, being within 20 miles of the sea coast.

So many advantages and conveniences to be enjoyed at Croft, added to the virtues of its Sulphur-water, which we have pointed out, must, we make no doubt, attract the attention of the public, and restore to this sweet and healthful village, the fame to which it is so well entitled.

F I N I S.